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BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION

JUN 21 2019

In the Matter of the Commission, on its )  
own motion, seeking to Administer the )  
Nebraska Universal Service Fund )  
Broadband Program. )  
)  
)  
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Application No. NUSF-92  
Progression Order No. Nebraska  
Public Service Commission

**COMMENTS OF**  
**NE COLORADO CELLULAR, INC. d/b/a VIAERO WIRELESS**

NE Colorado Cellular, Inc. d/b/a Viaero Wireless (“Viaero”), respectfully submits these Comments in response to the Nebraska Public Service Commission’s (the “Commission”) Order Seeking Comment and Scheduling Workshop entered on May 7, 2019 (the “Order”).

Pursuant to the Order, the Commission is considering modifications to its wireless infrastructure grant program, which is designed to update the program criteria and to recognize changes being made by the FCC in regard to universal service support. While the issues presented may elicit comments from other wireless and broadband providers, Viaero respectfully submits the following comments to the issues under consideration.

- 1. Whether the current rural threshold should be adjusted from the existing population density of less than 4.9 household per square mile as determined according to the U.S. Census data? Should the Commission continue to use this threshold? Why or Why Not? Should the Commission increase the household density threshold? If so, what is the appropriate number?**

In preparing Viaero’s submission for this round of NUSF-92 grants, we analyzed over 20 potential project sites. Several of these sites had densities of over 4.9 households per square mile (“H/S/M”), but otherwise would have provided service to areas that were un-served or underserved. Previous NUSF-92 grants have addressed coverage areas in larger and less

populated counties such as Cherry County and were somewhat more focused on the North Central and West Central parts of Nebraska. Focus has now shifted to more of the far Northeast, East and Southeastern areas, which tend to have a higher population density but remain underserved. Viaero would support use of household density as a qualification metric, but would suggest that it be calculated based on the density of households within the proposed coverage area and not the density of households in any given square mile. A value closer to 10 H/S/M would allow inclusion of households which would otherwise be excluded due to proximity to a small town or village whose population density might otherwise dis-qualify them.

**2. With Long Term Evolution (LTE) technology being deployed, does tower proximity according to specific technology (i.e. GSM, CDMA) matter any longer? If so why?**

With one of the primary objectives of NUSF-92 being the provision of voice and data services to unserved or underserved areas, the choice of technology and the proximity of the serving tower (or towers) to the target area is still important. While all carriers are transitioning their networks to the LTE technology, until that time that LTE is completely built out, the older technology is still needed in some areas to support CSFB (Circuit Switch FallBack), a separate technology which delivers traditional circuit-switched calls and services to LTE devices, because not all of the devices currently on the market support the Voice over LTE technology. Consequently, each carrier will propose a network design which accomplishes the specific speed objective for a given area with the technology and spectrum available to it. However, as the download and upload speeds increase, there is a corresponding increase in the signal to noise requirements. This technical phenomenon has the effect of reducing the coverage area, which will necessitate additional towers in closer proximity to cover any potential coverage gaps.

While the historic technology differences (GSM, CDMA) implemented between the carriers has been a determining factor in tower proximity in the past, Viaero would argue that given the industry-wide push towards LTE and VoLTE, as well as the adoption of 5G standards, these historic technology differences should not be a basis for funding new towers to be built side by side or within close proximity to each other, and the Applicant should have the burden to address the potential and ability for collocation when submitting an application to the Commission for funding.

- 3. Should the Commission re-examine how coverage areas are determined? Should the Commission standardize how the coverage footprint of a tower is determined? For example, should the Commission include blocks that would be covered by a certain percentage of the population or area?**

The Commission should request more detail in how coverage areas are determined. The actual radio frequency design which determines coverage areas is performed by the carrier applicant, but the design is not limited to various software tools incorporating digital terrain databases, antenna radiation patterns, clutter data, transmitter power, receiver sensitivity, frequency, channel bandwidth, resource block size, modulation scheme, numerous propagation models and detailed knowledge of the existing network. The output of this design is a GIS file which represents the specified downlink and uplink speeds at the edge of the covered area. Speeds closer to the cell site will generally be higher and should be shown.

How the ultimate coverage footprint is determined should be left to the applicant carrier since the carrier has the tools, resources and knowledge of its own networks and to complete a design, which should be disclosed to the Commission and Staff in the Application. This would align the mapping requirements with current federal regulations already in place for reporting

with the FCC (i.e. Form 477, CAF-II). However, the Commission might seek to standardize the specifications that the carriers use in a design, which could utilize the following:

1. Carrier Loading of 100% for Uplink and Downlink. This is a severe case but shows the capacity limits for a given channel bandwidth and modulation scheme.
2. Terrain database resolution of 50m or better.
3. Minimum Uplink and Downlink speeds as specified by the Commission.
4. Report no coverage below a -105 dBm Reference Signal Receive Power within a 5 MHz bandwidth. This would harmonize with the US Senate's pending Broadband DATA act.

Network resources such as carrier aggregation, Multiple Input / Multiple Output (MIMO), modulation scheme, antenna selection and spacing should be left to the carrier, but are factors utilized in the design and have an effect in the coverage area file. Additionally, the Applicant should demonstrate the quality of coverage and speeds available throughout the coverage area, and the "quality of service" proposed in the project area should be an evaluation metric that the Commission considers, not just the height of the tower proposed or the proposed coverage area. For example, as technology continues to evolve, and with the implementation of 5G, equipment will be placed lower on the towers, and will have a less dense area of coverage, but will have a greater penetration rating.

Since RF designs do not typically conform to artificial boundaries such as census blocks, tracts or counties, we suggest that density evaluations be based on the Households and/or POPS covered within the proposed coverage area. Geo-referenced household and/or POPS data is available from the US Census Bureau. This metric would still meet the necessary objective criteria, but would eliminate the issues of partial coverage within a census block/track boundary.

- 4. How should the Commission deal with equipment that may pose a security threat? How should the Commission determine this? Should the Commission follow the lead of the FCC? Why or why not?**

The Commission should continue to follow the laws, rules, regulations and requirements set by the Federal government and the FCC, that are now in effect, and as may be amended from time to time. The Federal Government and the numerous agencies within it have adequate resources to establish specific criteria, specifications and metrics for testing, evaluating and setting security standards for all telecommunications equipment that is used not only in Nebraska, but throughout the Country.

- 5. Does it still make sense to use vehicle traffic as a metric? Why or why not? What about recreational areas or areas that have seasonal capacity or coverage issues?**

Yes, Viaero believes that utilizing vehicle traffic as a metric could be useful when reviewing criteria for viable applications. However, vehicle traffic as an evaluation metric is often problematic due to the fact that the proposed coverage area typically bisects multiple roads at different points and makes a determination of traffic counts inaccurate. However, in the event that the data files for the vehicle traffic would be readily available to the public and applicants, this would enable an applicant to input this data into its mapping resources and run a query to more accurately reflect the vehicle traffic in the coverage area. Vehicle traffic can also be used as a “proxy” for H/S/M in and around state parks and recreational areas where there is little or no household density but where there is a large transient/mobile population.

- 6. Are there other sources of information that you think the Commission should use in ranking project worthiness? If so, what information should the Commission use and why?**

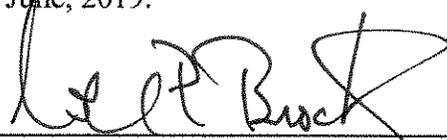
Some of the additional sources of information that could be used in evaluating the applications may include the following:

- Cost per POP/Household;
- Letters of support from anchor institutions (i.e. schools, hospitals, libraries, first responders, governmental buildings, towns, the County) and residents within the proposed project area; and
- The determination of whether a project rather than new project, and not a project in progress.
- Whether the project provides access to a “broadband” network, as now statutorily defined as at least 25Mbps download and 3 Mbps upload

**7. Should the Commission re-impose a matching requirement? If so, should the Commission consider a 25% match appropriate? Why or why not? Are there other considerations in applying a match?**

Yes, the Commission should re-impose a requirement for the Applicant to match at least 25% of the proposed project cost. This financial requirement demonstrates to the Commission multiple commitments from the Applicant. First, this shows that the Applicant is invested in timely completing the project, with a budget conscious perspective. This also shows that the Applicant is a viable company, with some financial stability. This requirement also addresses the need to leverage very limited NUSF resources for the greatest number of projects.

Respectfully submitted this 21<sup>st</sup> day of June, 2019.



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## CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this 21<sup>st</sup> day of June, 2019, one original and one electronic copy of the Comments of NE Colorado Cellular, Inc., d/b/a/ Viaero Wireless in NUSF-98, Progression Order No. 8 were hand-delivered to the Nebraska Public Service Commission, 1200 N Street, Suite 300, Lincoln NE and a copy of the same has been e-mailed to the following:

### Nebraska Public Service Commission

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A handwritten signature in black ink, appearing to read 'Loel P. Brooks', written over a horizontal line.

Loel P. Brooks